Chlorophyll A, in etiolated oat seedlings, 197
Chlorophyll and protein interrelationships in *Ananas comosus*, 160
changes in the, contents of curing burley tobacco, 34
effects of nitrogen on, 97
CHUN, H. H. Q., Effects of nitrogen on the nitrogenous fractions of *Ananas comosus* (L.) Merr., 127
CIBES, HECTOR R., Influence of mineral deficiencies on growth and composition of vanilla vines, 291
Cinchona ledgeriana, influence of high, medium, and low soil moisture on growth and alkaloid content of, 613
seedlings, influence of temperature on growth and alkaloid content of, 42
CLARK, WALTER S., 92
A comparison of photosynthesis in individual pine needles and entire seedlings at various light intensities, 51
Cobalt chloride paper, a modification of the celluloid holder for, 328
COMAR, C. L., Radioactive phosphorus procedures as applied to soil and plant research, 174
Contribution to the physics of cellulose fibres, P. H. Hermans, 94
Corn, some mold-induced changes in, 20
leaves, detached, nitrogen metabolism of, 465
Cotton, plants, resistance of, to Phymatotrichum root rot, 181
seedlings, relationship between the rate of infection of, by *Phymatotrichum omnivorum* and the available oxygen supply, 66
COTTON, ROBERT H., The vitamin content of soybeans and soybean sprouts as a function of germination time, 117
Crassulacean plants, studies in the metabolism of, 1, 205, 360, 477
Crop production and environment, R. O. Whyte, 93
Culture conditions and the development of the photosynthetic mechanism, 590
Culture in water, the behavior of excised leaves of *Bryophyllum calycinum*, 477
in sand, effect of alternating conditions of boron nutrition upon growth and boron content of grape vines, 526
CURTIS, O. F., JR., Distribution of rubber and resins in guayule, 333

D

Dandelion, scape, growth of, 393
physiological action of 2,4-dichlorophenoxyacetic acid on, 377
DANIELSON, L. L., Selectivity of 2,4-D and Sinox when applied to soil, 635
Daucus carota, the sugars of the roots of, 438
DECKER, JOHN P., The effect of air supply on apparent photosynthesis, 561
Diastase charcoal, 300
Dichlorophenoxyacetic acids, 2,4-, herbicidal action of, 58
physiological action of, on dandelion, 377
selectivity of, when applied to soil, 635
Diurnal variation in organic acid and starch content of *Bryophyllum calycinum*, 360
DROSDOFF, MATTHEW, Some effects of potassium deficiency on the nitrogen metabolism and oil synthesis in the tung tree (*Aleurites fordii*), 538
DURRELL, MARY, The use of 2,3,5-triphenyltetrazolium chloride as a measure of seed germinability, 149

E

EATON, FRANK M., Relations between carbohydrate accumulation and resistance of cotton plants to Phymatotrichum root rot in dry summers, 181
Election results, 329
Elements of soil conservation, HUGH HAMMOND BENNETT, 330
EL SHISHINY, E. D. H., Respiration and nitrogen metabolism of whole and sliced radish roots with reference to the effect of alternation of air and nitrogen atmospheres, 452
ENY, DESIRE M., Ether-soluble organic acids of mature Valencia orange leaves, 257
Enzymes, JAMES B. SUMNER, and G. FRED SOMERS, 331
ERGLE, D. R., Relations between carbohydrate accumulation and resistance of cotton plants to Phymatotrichum root rot in dry summers, 181

F

Fifty tropical fruits of Nassau, KENDAL and JULIA MORTON, 330
FLOYD, BAYARD F., 92

FRANCO, C. M., The absorption of phosphorus and iron from nutrient solutions, 627
FRENCH, DR. C. STACY, 329
FREY-WISSLING, A., Ernährung und Stoffwechsel der Pflanzen, 94

G

GARNER, WIGHTMAN W., The production of tobacco, 330
GAWADI, A. G., The sugars of the roots of *Daucus carota*, 438
Germinability, seed and the use of 2,3,5-triphenyl-tetrazolium chloride, 149
Germination, of *Asystasia gangetica* L. seed, 603
time, the vitamin content of soybeans and soybean sprouts, 117
GIBBS, MARTIN, The chemical relation of the leaf, sheath, and stem of blue panicum, *Panicum antidotale*, Retz., 325
GILBERT, SEYMOUR G., Some effects of potassium deficiency on the nitrogen metabolism and oil synthesis in the tung tree (*Aleurites fordii*), 538
GINTER, WANDA D., Studies in the metabolism of Crassulacean plants:
changes in the composition of *Bryophyllum calycinum* during growth, 1
the effect upon the composition of *Bryophyllum calycinum* of the form in which nitrogen is supplied, 205
the diurnal variation in organic acids and starch content of *Bryophyllum calycinum*, 360
the behavior of excised leaves of *Bryophyllum calycinum* during culture in water, 477
GOETHE'S BOTANY: The metamorphosis of plants (1790) and Tobler's ode to nature (1782).
GOODWIN, RICHARD H., The formation of chlorophyll A in etiolated oat seedlings, 197
GOURLEY, JOSEPH H., 92
Grape vines in sand culture, 526
GREULACH, VICTOR A., A modification of the celluloid holder for cobalt chloride paper, 328
GRIFFITH, R. B., Changes in the chlorophyll and carotene contents of curing burley tobacco cut at different stages of maturity, 34
Growth, and alkaloid content of Cinchona seedlings, influence of temperature on, 42
changes in the composition of *Bryophyllum calycinum* during, 1
influence of mineral deficiencies on, 291
of *Cinchona ledgeriana*, 613
of the dandelion scape, 393
of grape vines in sand culture, 526
plant, with artificial sources of radiant energy, 494
Guard cells, starch hydrolysis induced by polarized light in, 270
Guayule, distribution of rubber and resins in, 333
levulins and inulin in, 77
GUSTAFSON, FELIX G., Distribution of thiamin and riboflavin in the tomato plant, 620

H

HAMNER, CHARLES L., Changes in food reserves and respiratory capacity of bindweed tissues accompanying herbicidal action of 2,4-dichlorophenoxyacetic acid, 58
HARTMANN, H. T., Some effects of temperature and photoperiod on flower formation and runner production in the strawberry, 407
HARTMAN, JOHN, The non-flowering character of sweet potatoes of the Jersey type, 322
HAYDEN, FRANCES R., Vitamin studies of varieties and strains of peas, 548
HEINZE, P. H., Vitamin studies of varieties and strains of peas, 548
HENDERSON-WEBBER, LETA, Studies on the relationship between the rate of infection of cotton seedlings by *Phymatotrichum omnivorum* and the available oxygen supply, 66
HERMANS, P. H., Contribution to the physics of cellulose fibres, 94
Hevea brasiliensis, 193
HUMMER, R. W., Inverse correlation between rubber hydrocarbons and insolubles in total solids of latex from *Hevea brasiliensis*, 193
Hydrocarbons, 193

I

Index to the literature on photochemical analysis, 331

Indole-3-acetic acid, 300
Indoleacetic acid, 598
Inulin, 77
Irish potato, 421
Iron, absorption of, from nutrient solutions, 627

J

JEFFREY, R. N., Changes in the chlorophyll and carotene contents of curing burley tobacco cut at different stages of maturity, 34

K

KING, GENEVIEVE N., Artificial parthenocarpy in *Lycopersicum esculentum*; tissue development, 572
KRAMER, PAUL J., A comparison of photosynthesis in individual pine needles and entire seedlings at various light intensities, 51
An automatic apparatus to cover and uncover plants in photoperiod experiments, 88
A viewpoint for plant physiology, 315

L

LANGELAND, WILLIAM E., The effect of indole-3-acetic acid in the diastase charcoal model system, 300
LEAVENWORTH, CHARLES S., Studies in the metabolism of Crassulacean plants:
changes in the composition of *Bryophyllum calycinum* during growth, 1
the effect upon the composition of *Bryophyllum calycinum* of the form in which nitrogen is supplied, 205
the diurnal variation in organic acid and starch content of *Bryophyllum calycinum*, 360
the behavior of excised leaves of *Bryophyllum calycinum* during culture in water, 477
LEVITT, J., The thermodynamics of active (non-osmotic) water absorption, 514
Levulins, 77
Life membership, 329
Light, 51
ultraviolet, 608
LIVINGSTON, DR. BURTON EDWARD, 201
LOOMIS, W. E., The absorption of phosphorus and iron from nutrient solutions, 627
LOUSTALOT, ARNAUD J., Influence of temperature on growth and alkaloid content of cinchona seedlings, 42
Influence of mineral deficiencies on growth and composition of vanilla vines, 291
Influence of high, medium, and low soil moisture on growth and alkaloid content of *Cinchona ledgeriana*, 613
Lycopersicum esculentum, artificial parthenocarpy in, 572
effect of ultraviolet light on subsequent ripening of the fruit of, 608
LYLE, E. W., Relations between carbohydrate accumulation and resistance of cotton plants to Phymatotrichum root rot in dry summers, 181

M

MAC GILLIVRAY, JOHN H., Soluble solids content of different regions of watermelons, 637
MAC VICAR, ROBERT, A further investigation of the replacement of boron by indoleacetic acid, 598
MACK, PAULINE BEERY, The vitamin content of soybeans and soybean sprouts as a function of germination time, 117
Manuring of cotton in India, V. G. Panse, 203
Mechanisms of reactions at carbon-carbon double bonds, Charles C. Price, 203
Metabolism, nitrogen, 465, 538
of Crassulacean plants, 1, 205, 360, 477
MILLER, DR. EDWIN CYRUS, 202
ERSTON V., The effect of ultraviolet light on subsequent ripening of the fruit of the tomato (*Lycopersicum esculentum*), 608
Mineral deficiencies, 228, 291
Mold induced changes in shelled corn, 20
MORTON, KENDAL and JULIA, Fifty tropical fruits of Nassau, 330
MOXON, A. L., Nitrogen metabolism of detached corn leaves in darkness and in light, 465
MULLISON, DR. WENDELL R., 93
MYERS, JACK, Culture conditions and the development of the photosynthetic mechanism. V. Influence of the composition of the nutrient medium, 590

N

NAGEL, C. M., Some mold-induced changes in shelled corn, 20

NELLER, J. R., Radioactive phosphorus procedures as applied to soil and plant research, 174
Nitrogen, 97, 127, 205, 244
metabolism, 452, 465, 538
NOGGLE, G. R., Effect of mineral deficiencies upon the synthesis of riboflavin and ascorbic acid by the oat plant, 228
Nutrient medium, 590
Nutrient solutions, 627
Nutrition, boron, 526

O

Oat plant, 228
seedlings, 197
Oil synthesis, 538
Orange, 257
Organic acids, 257, 360
OWENS, OLGA V. H., The formation of chlorophyll A in etiolated oat seedlings, 197
Oxygen, 66

P

Panicum antidotale Retz., 325
PANSE, V. G., Manuring of cotton in India, 203
Parthenium agrentatum, 77
Parthenocarpy, artificial, 572
Peas, vitamin studies of, 548
Penicillin, 308
pH and plants, JAMES SMALL, 95
Phosphate, 308
Phosphorus, radioactive, procedures as applied to soil and plant research, 174
in vegetable crops, 244
absorption of, from nutrient solutions, 627
Photoperiod, experiments, automatic apparatus to cover and uncover plants, 88
effects of, on flower formation and runner production in the strawberry, 407
Photosynthesis, in individual pine needles and entire seedlings, 51
the effect of air supply on, 561
Photosynthetic mechanism, culture conditions and the development of, 590
Phymatotrichum omnivorum, infection of cotton seedlings and available oxygen supply, 66
resistance of cotton plants to, 181
Pine, photosynthesis in individual needles and entire seedlings at various light intensities, 51
Plant growth with artificial sources of radiant energy, 494
research, radioactive phosphorus procedures as applied to, 174
Polarized light, starch hydrolysis induced by, in stomatal guard cells, 270
Porometer method for the continuous estimation of stomatal aperture, 582
PORTER, R. H., The use of 2,3,5-triphenyltetrazoliumchloride as a measure of seed germinability, 149
Potassium deficiency, effects on nitrogen metabolism and oil synthesis in the tung tree, 538
Potato, Irish, carotenoid pigments in tubers of the Katahdin variety of, 421
PRATT, ROBERTSON, Influence of phosphate on stability of crude penicillin, 308
PRICE, CHARLES C., Mechanisms of reactions at carbon-carbon double bonds, 203
Production of tobacco, Wightman W. Garner, 330
Protein and chlorophyll interrelationships, 160
PUCHER, GEORGE W., Studies in the metabolism of Crassulacean plants:
changes in the composition of *Bryophyllum calycinum* during growth, 1
the effect upon the composition of *Bryophyllum calycinum* of the form in which nitrogen is supplied, 205
the diurnal variation in organic acid and starch content of *Bryophyllum calycinum*, 360
the behavior of excised leaves of *Bryophyllum calycinum* during culture in water, 477

R

Radiant energy, plant growth with artificial sources of, 494
Radioactive phosphorus, procedures as applied to soil and plant research, 174
Radish roots, whole and sliced, respiration and nitrogen metabolism of, 452
RASMUSSEN, LOWELL W., The physiological action of 2,4-dichlorophenoxyacetic acid on dandelion, *Taraxacum officinale*, 377

Resins in guayule, 333
Respiration and nitrogen metabolism, radish roots, 452
Respiratory capacity of bindweed tissues, 58
Riboflavin, mineral deficiencies and synthesis of, by the oat plant, 228
in the tomato plant, 620
ROMM, H. J., The use of 2,3,5-triphenyl tetrazoliumchloride as a measure of seed germinability, 149
Rubber and resins in guayule, 333
hydrocarbons, 193

S

SÄID, HUSEIN, Respiration and nitrogen metabolism of whole and sliced radish roots with reference of the effect of alternation of air and nitrogen atmospheres, 452
SCHOMER, HAROLD A., The effect of ultraviolet light on subsequent ripening of the fruit of the tomato (*Lycopersicum esculentum*), 608
SCHRADER, A. LEE, Effect of alternating conditions of boron nutrition upon growth and boron content of grape vines in sand culture, 526
SCHROEDER, R. A., Interrelationships of calcium, nitrogen, and phosphorus in vegetable crops, 244
SCOTT, L. E., Effect of alternating conditions of boron nutrition upon growth and boron content of grape vines in sand culture, 526
Seed, *Asystasia gangetica* L., germination of, 603
Seed geminability, the use of 2,3,5-triphenyl-tetrazoliumchloride as a measure of, 149
Seedlings, oat, formation of chlorophyll A in, 197
SELL, HAROLD M., Some effects of potassium deficiency on the nitrogen metabolism and oil synthesis in the tung tree (*Aleurites fordii*), 538
SEMENIUK, G., Some mold-induced changes in shelled corn, 20
SEMMENS, E. S., Starch hydrolysis induced by polarized light in stomatal guard cells of living plants, 270
SHIVE, JOHN WESLEY, 91
SIDERIS, C. P., Effects of nitrogen on chlorophyll, acidity, ascorbic acid, and carbohydrate fractions of *Ananas comosus* (L.) Merr., 97
Effects of nitrogen on the nitrogenous fractions of *Ananas comosus* (L.) Merr., 127
Chlorophyll and protein interrelationships in *Ananas comosus* (L.) Merr., 160
SINCLAIR, WALTON B., Ether-soluble organic acids of mature valencia orange leaves, 257
Sinox, selectivity of, when applied to soil, 635
SLATTERY, M. C., Levulins and inulin in guayule, *Parthenium argentatum* A. Gray, 77
SMALL, JAMES, pH and plants, 95
SMITH, FREDERICK G., Changes in food reserves and respiratory capacity of bindweed tissues accompanying herbicidal action of 2,4-dichlorophenoxyacetic acid, 58
The effect of indole-3-acetic acid in the diastase charcoal model system, 300
Soil, radioactive phosphorus procedures as applied to, 174
moisture, 613
SOMERS, G., FRED and JAMES B. SUMNER, Enzymes, 331
Soybeans, vitamin content of, as a function of germination time, 117
SPOEHR, DR. H. A., 329
Starch content of *Bryophyllum calycinum*, 360
hydrolysis induced by polarized light, 270
STEPHEN HALES award, 201
STEWART, W. S., inverse correlation between rubber hydrocarbons and insolubles in total solids of latex from *Hevea brasiliensis*, 193
STILES, WALTER, Trace elements in plants and animals, 330
Stomatal aperture, 582
guard cells, 270
STOTZ, ELMER, The effect of indole-3-acetic acid in the diastase charcoal model system, 300
Strawberry, 407
Sugars of the roots of *Daucus carota*, 438
SUMNER, JAMES B. and G. FRED SOMERS, Enzymes, 331
Sweet potatoes, the non-flowering character of, 322

T

Taraxacum officinale, 377
Temperature, effects of, on flower formation and runner production in strawberry, 407
influence of, on growth and alkaloid content of Cinchona seedlings, 42
requirement for germination of *Asystasia gangetica* seed, 603
Thermodynamics of active (nonosmotic) water absorption, 514
Thiamin, in the tomato plant, 620
Tobacco, burley, 34
Tobler's Ode to nature (1782), edited by FRANS VERDOORN, 95
Tomato, distribution of thiamin and riboflavin in, 620
effect of ultraviolet light on ripening of the fruit of, 608
TOTTINGHAM, W. E., A further investigation of the replacement of boron by indoleacetic acid, 598
Trace elements in plants and animals, Walter Stiles, 330
TRAUB, HAMILTON P., Levulins and inulin in guayule, *Parthenium argentatum* A. Gray, 77
Triphenyl-tetrzsoliumchloride, 2,3,5-, 149

U

Ultraviolet light, 608

V

Valencia orange, ether-soluble organic acids of mature leaves, 257
Vanilla vines, influence of mineral deficiencies on growth and composition of, 291
Vegetable crops, interrelationships of calcium, nitrogen, and phosphorus in, 244
VERDOORN, FRANS, 95
VICKERY, HUBERT BRADFORD, Studies in the metabolism of Crassulacean plants:
changes in the composition of *Bryophyllum calycinum* during growth, 1
the effect upon the composition of *Bryophyllum calycinum* of the form in which nitrogen is supplied, 205
the diurnal variation in organic acid and starch content of *Bryophyllum calycinum*, 360
the behavior of excised leaves of *Bryophyllum calycinum* during culture in water, 477
VIETS, F. G., Nitrogen metabolism of detached corn leaves in darkness and in light, 465
Vitamin content of soybeans and soybean sprouts, 117
studies of varieties and strains of peas, 548

W

WADE, B. L., Vitamin studies of varieties and strains of peas, 548
WAI, KIT NGAAN TSO, The vitamin content of soybeans and soybean sprouts as a function of germination time, 117
Water absorption, the thermodynamics of, 514
Watermelon, soluble solids content of different regions of, 637
WATSON, STANLEY A., Effect of mineral deficiencies upon the synthesis of riboflavin and ascorbic acid by the oat plant, 228
WEBBER, HAROLD H., Studies on the relationship between the rate of infection of cotton seedlings by *Phymatotrichum omnivorum* and the available oxygen supply, 66
WEBBER, LETA HENDERSON, Studies on the relationship between the rate of infection of cotton seedlings by *Phymatotrichum omnivorum* and the available oxygen supply, 66
WEINMANN, H., Determination of total available carbohydrates in plants, 279
WHITEHEAD, E. I., Nitrogen metabolism of detached corn leaves in darkness and in light, 465
WHYTE, R. O., Crop production and environment, 93
WILSON, CHARLES C., The porometer method for the continuous estimation of stomatal aperture, 582
WINTERS, HAROLD F., Influence of temperature on growth and alkaloid content of Cinchona seedlings, 42
Influence of high, medium, and low soil moisture on growth and alkaloid content of *Cinchona ledgeriana*, 613
WISEMAN, HERBERT G., Carotenoid pig-

ments in tubers of the Katahdin variety of Irish potato, 421
WITHROW, ALICE P., Plant growth with artificial sources of radiant energy, 494
WITHROW, ROBERT B., Plant growth with artificial sources of radiant energy, 494
WITTWER, S. H., Interrelationships of calcium, nitrogen, and phosphorus in vegetable crops, 244

Y

YOUNG, H. Y., Effects of nitrogen on chlorophyll, acidity, ascorbic acid, and carbohydrate fractions of *Ananas comosus* (L.) Merr., 97
Effects of nitrogen on the nitrogenous fractions of *Ananas comosus* (L.) Merr., 127